WO 2005/015070 A1

CLAIMS

- A pipe for carrying gas and/or fluid, in particular with an internal combustion engine,
 - having a supporting body (2) which consists of a relatively rigid first plastic and has one recess (6) or multiple recesses (6) which pass through the supporting body (2) across the longitudinal direction (7) and are arranged so that the supporting body (2) is flexible in a longitudinal section (8) that is provided with the recess (6) or the recesses (6) and withstands compressive forces acting on the inside and/or outside of the pipe (1) during use of said pipe,
 - having a membrane (3) consisting of a relatively soft flexible second plastic arranged on the supporting body (2) so that it seals the recess (6) or recesses (6) and transmits the compressive forces acting on the membrane (3) during use of the pipe (1) to the supporting body (2).
- 2. The pipe according to Claim 1,

characterized in that

the membrane (3) is integrally molded on the supporting body (2) or vice versa.

3. The pipe according to Claim 1 or 2,

characterized in that

the membrane (3) is attached to the supporting body (2) in a form-fitting and/or integrally bonded manner.

- 4. The pipe according to any one of Claims 1 through 3, characterized in that
 - the supporting body (2) is an injection-molded part produced in one step, and/or
 - the membrane (3) is an injection-molded part produced in one step.
- 5. The pipe according to any one of Claims 1 through 4,

characterized in that

the membrane (3) sheaths the supporting body (2) completely from the inside and/or from the outside at least in the area of the flexible longitudinal section.

6. The pipe according to any one of Claims 1 through 5,

characterized in that

the recesses (6) are distributed along the pipe (1) in such a way that the supporting body (2) has two or more flexible longitudinal sections (8), between which the supporting body (2) has a closed section on the circumference.

- 7. The pipe according to any one of Claims 1 through 6, characterized in that
 - at least one end section (13, 14) of the pipe (1) is formed by a section (15, 16) of the supporting body (2) that is closed on the circumference, and/or

- at least one end section (13, 14) of the pipe (1) is formed by a section (20) of the membrane (3) which is closed on the circumference.
- 8. The pipe according to any one of Claims 1 through 6,

characterized in that

the pipe (1) has two end sections (13, 14) designed as connections, each being formed by a section (15, 16) of the supporting body (2) which is closed at the circumference and at least one flexible longitudinal section (8) of the supporting body (2) being arranged between them.

9. The pipe according to Claims 7 or 8,

characterized in that

a gasket (17) made of the second plastic is applied to at least one of the end sections (15, 16) made of the first plastic.

10. The pipe according to any one of Claims 1 through 9,

characterized in that

at least one gasket (18) is integrally molded on the membrane (3).

11. The pipe according to any one of Claims 1 through 10, characterized in that

at least one connection on the end or side is integrally molded on the supporting body (2), said connection having a gasket made of the second plastic.

- 12. The pipe according to any one of Claims 1 through 11, characterized in that
 - the membrane (3) is designed in one piece, and
 - the supporting body (2) is designed in one piece.
- 13. The pipe according to any one of Claims 1 through 12, characterized in that
 - the pipe (1) is a suction pipe situated in the intake tract of an internal combustion engine.
- 14. The pipe according to any one of Claims 1 through 13, characterized in that
 - the recesses (6) are arranged in the flexible longitudinal section (8) of the supporting body (2) so that the supporting body (2) which remains in the flexible longitudinal section (8) forms a cardanically flexible skeleton.
- 15. The pipe according to any one of Claims 1 through 14, characterized in that
 - the recesses (6) are arranged in the flexible longitudinal section (8) of the supporting body (2) so that the supporting body (2) remaining in the flexible longitudinal section (8) has rings (9) arranged coaxially with the longitudinal direction (7) of the pipe (1) and side-by-side in the longitudinal direction,

- adjacent rings (9) are joined together by two webs (10) that are diametrically opposed,
- with each ring (9) that is arranged between two neighboring rings (9), the two webs (10) that are connected to the one neighboring ring (9) are arranged so they are offset by 90° with respect to the two webs (10) connected to the other neighboring ring (9).
- 16. The pipe according to any one of Claims 1 through 13,

characterized in that

only one recess (6) is provided in the supporting body (2) in the flexible longitudinal section (8), said recess extending in a spiral so that the supporting body (2) which remains in the flexible longitudinal section (8) also has a spiral shape.

17. The pipe according to Claim 16,

characterized in that

the membrane (3) also has a spiral shape.

- 18. The pipe according to any one of Claims 1 through 17, characterized in that
 - the membrane (3) is designed to be gas permeable, or
 - the membrane (3) is designed to be airtight and tightly seals the recess (6) or recesses (6).
- 19. A method for producing a pipe (1) according to any one of Claims 1 through 18,

in which the one body (2, 3) made of the one plastic is produced from the one plastic in a first injection-molding step and the other body (2, 3) is produced from the other plastic in a second injection-molding step.

20. The method according to Claim 19,

characterized in that

both injection-molding steps are performed in the same injection mold.

21. The method according to Claim 19 or 20,

characterized in that

the supporting body (2) is produced in the first injection-molding step.